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TREATMENT

OF

SCARLET FEVER AND MEASLES,

WITH SESQUI-CARBONATE OF AMMONIA.

BY

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“I have always thought it a greater happiness to discover a certain method of curing even the slightest disease, than to accumulate the largest fortune; and whoever compasses the former, I esteem not only happier, but also better and wiser than the latter. As it is the part of a wicked man to destroy his fellow-creatures, so it is the duty of a good man to preserve them, and instruct others how to save them from death, even after his own decease.”—*Sydenham's Works*, vol. ii. p. 384.

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IN the Report of a meeting of the *Epidemiological Society*, on March 4, 1861, which appeared in a recent number of the *Lancet* (6th April, 1861) it is stated that an eminent Metropolitan physician, Dr. Babington, then said, "Few diseases were so little amenable to treatment as scarlet fever in a severe form."

This is undoubtedly true under the usual means employed; but it is an important question, are those means the best? I think not. Blood-letting, bark and acids, emetics, purgatives, diaphoretics, calomel and antimony, contrayerva with squills, cold affusion, and fumigation, are not to be depended on. They have been extensively used, and still continue to be trusted to, often without the least good effect. No wonder, then, that scarlet fever in a severe form, still continues to be so little amenable to treatment, and that the consequences of even slight cases are sometimes so disastrous and fatal.

Nevertheless, I believe there is abundant evidence before the profession to prove that in the *sesqui-carbonate of ammonia* a Beneficent Providence has provided a remedy of *specific powers* in scarlet fever and measles; but that it is not employed and trusted to as it merits. It has always been ranged by medical writers in the class of *neurotics*, *stimulants*, or nerve-medicines, and this error appears to be a principal cause of the prevalent want of confidence in its use in these and some other diseases. In internal use, dissolved in water, it does not, in an ordinary dose, accelerate the pulse, or produce any of the usual sensible effects of stimulants, but it has the property of a *restorative*; it gradually restores the strength without stimulating the system. It is difficult to understand what medical writers mean with respect to the action of nerve-medicines. Perhaps the general notion is that ammonia affects the body through its action on the nerves, but of this we have not the shadow of a proof; the fact is, that ammonia is carried directly into the blood, improves its quality, and beneficially affects the nerves through the

circulation, of which we have clear and abundant proof. It is a diffusible sustaining saline alterative, and antiseptic; but from the crude notions usually advanced by writers on *Materia Medica*, professional men have contracted the opinion that it is merely a stimulant, although a valuable one, and therefore not to be depended on in formidable cases of these disorders. This is assuredly an erroneous opinion, from which many have severely suffered. Dr. Chapman, who was at the head of the profession in America, has an important remark in point. "In one respect," he says, "this medicine differs from every article of the class to which it is attached, and, it would seem, from all other medicines. The peculiarity to which I allude is this, that the excitement it raises approaches more nearly to that of healthy action."* No doubt it does, because it does not properly belong to the class of stimulants, but to that of restorative blood medicines, which counteract a septic tendency in the organic fluids.

The opposite opinion has led to its being so often combined with other medicines, as if it were not worthy to be trusted alone. We have a notable proof of this in Dr. Copland's *Medical Dictionary*. The learned author of that very valuable work says (vol. iii. p. 700) "The sesqui-carbonate of ammonia was strongly recommended by Peart; it is certainly often most beneficial when combined as above advised, according to the peculiarities of individual cases." Now we believe that it is always most beneficial when given alone, and that the combination with other medicines is never requisite, but is often hurtful. It is hurtful by interfering with the full specific powers of the remedy, from which it diverts the attention of the physician, while it impairs his confidence in the persevering employment of it, when anything untoward occurs during its administration in a combined form. Then, entirely in the dark as to which article in the combination is at fault, he alters it, and perhaps prescribes something less suitable, it may be discards the ammonia altogether; and thus is never in a position to test fully the efficiency of this incomparable remedy. This was the experience both of Dr. Peart and Mr. Wilkinson.

Sesqui-carbonate of ammonia does not act on the nerves but on the blood, and is one of the mildest and yet most powerful and salutary *blood medicines* we possess. If it is not natural to the blood, yet it is a *vital antidote*, possessing the specific property in the two diseases now under our consideration, of counteracting and destroying the morbid material by which they are induced. Instead of being temporary in its action, as it has been too much the fashion to regard it, it is permanent, effecting in a marked manner lasting relief and cure, partly by counteracting the putrescence of the fluids, and partly by expelling the offending matter. It does not directly exalt nervous force, but it is most evident that it supplies vital force, and thus increases nervous energy.

* Eberle's *Materia Medica*, vol. ii. p. 164.

Hence its great use in syphilis, which is a blood disease, and for which it was at one time properly regarded as almost a specific; and in numerous cases of that complaint it is certainly a far more suitable and efficient remedy than mercury. It is a powerful blood solvent.* It invigorates the capillary vessels, accelerates the movement of the blood in them, and effectually controls the strong tendency in scarlet fever and diphtheria to fibrinous deposition. It aids materially in the change of venous into arterial blood. Hence its singular efficacy, in combination with squills, in the chronic bronchitis of old people; and, when combined with tartar emetic, in acute bronchitis and pneumonia at all ages. Both in acute and chronic bronchitis, when we see the signs of venous blood mingling in the general circulation, the complexion being dusky, and the lips bluish, ammonia is a valuable remedy in combination with emetic tartar. The latter medicine checks and reduces the inflammation present, and the ammonia sustains the strength and promotes expectoration, by invigorating the capillary circulation and assisting in arterializing the blood.

With the erroneous views generally entertained respecting the operation of ammonia by writers on *Materia Medica*, no wonder that we should meet with such remarks as the following. Dr. A. T. Thomson says, *Elem. of M. Medica*, vol. i. p. 402, "It is not easy to explain the manner in which ammonia operates when it is taken into the stomach for warding off the effects of the bites of poisonous snakes, unless we admit that the virus introduced into the wound acts as an immediate and direct sedative to the nervous system, and that the ammonia, by sustaining the nervous energy, enables the system to withstand the influence of the poison until it expends its power."

Here is a fair specimen of the neuro-pathology—a fruitful source of so many errors in practical medicine. The virus of snakes does not act at all on the nerves. Its sedative operation on the nervous system is merely imaginary, and so is that of ammonia directly sustaining the nervous energy. The certain facts are that the poison of serpents instantly attacks the blood, to the extent of producing a visible fermentation in it when microscopically examined, and that ammonia, by destroying the morbid power of the virus there, proves a specific remedy. It evidently neutralizes the virus carried into the blood, and thus circulated throughout the system. This is perfectly intelligible; and ammonia operates in the same way in scarlet fever and measles, diseases in which the whole blood of the sufferer is struck with a virulent poison, which ammonia neutralizes. Its well-ascertained power over the potent poison of venomous serpents, spreading as it does with such fearful rapidity through the circulation, is a striking proof of its remarkable antiseptic and life-giving qualities.

That "the poison of scarlet fever primarily acts on the great

* Richardson on the Blood, p. 300 and 322-7.

nervous centres, deranges their functions, and produces fever,"* is a gratuitous assumption, clearly contrary to the fact; to use a homely phrase, it is putting the cart before the horse. This erroneous *neuro-pathology* is probably another cause of the unsound and unstable views frequently entertained in the profession, with regard both to the nature and treatment of scarlet fever and measles. They are diseases in which the blood is so primarily and specially affected, that its vital properties are greatly impaired. It is to this vital fluid that the practitioner must look both first and last, if he would treat them scientifically and successfully, for the circulating blood is the medium through which the poison acts upon the solids. What Dr. Stevens says in his admirable *Treatise on the Blood*, in reference to remittent and typhus fever, is perfectly true in the fevers I now treat of (p. 294). "The blood is the first part of the system which feels the effect of the remote cause; and when the blood is poisoned, the impression which is ultimately made on the nervous system is merely the effect of the diseased state of the vital current, which, as I have said, receives the shock, and communicates the disease to the whole system. Now, if the cause of the disease produces its effects entirely through the medium of the blood, we shall then be more likely to effect a cure by the use of those agents which enter the circulation, and, like the remote cause of fever, act not only on the blood itself, but on every organ, and every solid of the living body, not by any direct impression on the nervous system, but entirely through the medium of their nutritive fluid."

It cannot be too frequently insisted upon that the blood lives and is nourished through itself, and in no degree depends on any other part of the body; which cannot be said of the nerves, tissues, or any of the vessels, for they are all strictly dependent on the blood, both for their proper life, and for the due performance of their several functions. The blood is the natural source of life and health to the whole body;—it is the first seat of disorder in almost all complaints, hence to a deteriorated or poisoned condition of the blood, we are justified in referring the great majority of cases both of derangement of function, and disorganisation of structure.† Therefore when the natural composition and vital properties of this all-important fluid are much altered, we at once recognise a clear and sufficient cause for the textural changes in the kidneys, brain, and other organs, which so frequently depend upon, or follow, scarlet fever and measles, when not treated with ammonia. Happily, professional men are now becoming awake to the pre-eminent

* R. Williams's *Elem. of Practical Med.* vol. i. p. 121. Dr. R. Williams was one of the most thoughtful and discerning of modern physicians, and yet if the reader will turn to his *Elements of Medicine*, vol. i. p. 159, he will find there a striking and lamentable proof how entirely and unquestionably erroneous the opinion of the most sagacious may sometimes be.

† Jones and Sieveking's *Pathological Anatomy*, p. 57.

importance of directing special attention to the blood in the treatment of disease, and consequently to the superior value and efficacy of the neutral and alkaline salts, whereby our therapeutics have been vastly improved, and our success considerably increased.

But the chief appeal must be to experience. Does experience justify the opinion that few diseases are so little amenable to correct treatment as scarlet fever in a severe form? I think not. On the contrary, it proves that this fever in its severest form is more amenable to treatment by ammonia, than almost any other severe malady is by any means usually employed. Acute rheumatism is not so controllable by alkalies, or any other known remedy. Ague is not so controllable by bark. Syphilis in its severe form is not so controllable by mercury. I have no desire to extol this remedy above its value, and have no temptation to do it; but it is generally estimated so far below its great merits, as to render necessary a caution not to underrate them; and, in the hope that the profession may be induced to give it a fair trial in the diseases now considered, it is desirable not to shrink from a plain declaration of its specific power as verified by ample experience.

Dr. Peart, a physician in considerable practice at Gainsborough, was one of the first discoverers of the value of sesqui-carbonate of ammonia in scarlet fever and putrid sore throat. He dissolved two drachms of the carbonate of ammonia in five ounces of water, and directs the patient to take half a table spoonful, or two tea-spoonfuls every two, three, or four hours, according to the urgency of the symptoms. If the difficulty of swallowing abate, and the patient wish for it, a little cold water may be added to each dose. Cold water, or toast and water, may be drunk at pleasure. The above remedy was given in every form, and in every stage of the scarlatina. "Some," he says, "were glowing with universal efflorescence; in some, the extremities were swelled; in others, foetid ulcers appeared; in most, the throat was swelled and inflamed, often ulcerated; and respiration almost prevented; but, in the most alarming cases, a scorching fever, and raging delirium, rendered the patient's situation horribly distressing: yet, in all these variations of the disease, the volatile alkali was my specific, which I administered to between two and three hundred patients successively and successfully." "The immediate effects of the remedy are stated to be a diminution of heat, fever, and delirium, and a disposition to sleep." It is hardly necessary to mention that during the exhibition of this remedy, the bowels should be kept in proper order; and that if, at any time, there should be any accumulation, two grains of hydrarg. chlorid. and ten of pulv. jalap comp. should be given; gargles, likewise, should be employed.

Mr. Wilkinson, of New Broad Street, in his day a practitioner of extensive practice and great integrity, says: (*On Cutaneous Diseases*, p. 13 *et seq.*)—"In the year 1803, I attended several cases of the scarlatina maligna with Dr. Willan, and the late Dr. Hamilton. It is well known that the disease raged most

fatally during that period, and we lost four of our patients out of five in one family. Never were men more puzzled to know what remedies to adopt: all which Dr. Willan has recommended in his publication were employed. Emetics, purgatives, calomel, and antimony; many diaphoretics; opium, wine, and acids; bark, blisters, decoct. contray. with oxymel of squills; application of cold water, gargles of different descriptions, fumigations, etc.: all without the least good effect; all without making the least sensible impression upon the disease in any of its stages.

"One fine girl, about eleven years of age, in high health and spirits in the morning, was attacked, an hour after, by the disease, and destroyed in thirty-six hours.

"About this time, Dr. Peart published his *Practical Information on the Malignant Scarlet Fever and Sore Throat*, in which he describes the wonderful effects of the subcarbonate of ammonia, and considers it to be endowed with a specific power over that disease. Like other practitioners, he was continually lamenting the loss of his patients by that dreadful malady; till, by his own suggestion, he employed the subcarbonate of ammonia, in the manner he describes; and from that moment, he did not lose one patient out of nearly three hundred.

"When I read this account, I immediately enquired after the character of Dr. Peart, and finding, that he was most respectable, both in talent and probity, and engaged in very considerable practice, I had no reason to doubt the truth of his statement, and therefore immediately adopted his remedy; and consonant with my own principle, that an effectual remedy for one genus will, with proper management, cure all the genera of the same order, I administered it in all the following diseases, erysipelas, rubcola, scarlatina, urticaria, roscola, and erythema, with all their varieties; and I am happy to be able to declare that, from that moment to the present, a space of seventeen years, I have, not only never lost a patient in the above diseases, but have never had a case of the kind that has even appeared dangerous, or that has even given me a moment's anxiety.

"I will take the liberty to state, that I depend not upon its diuretic, nor its diaphoretic qualities, but believe, that it possesses the power of increasing the strength of the arterial action, at the same time that it diminishes its frequency; that it supports the *vis vitæ* without increasing the heat or irritability of the system; and by such means counteracts the tendency in the scarlatina anginosa and maligna, to ulceration and sloughing, and all the other evils which sometimes attend this dreadful disease. But, to effect such purposes, it must be given as Dr. Peart has described, in a state as strongly stimulating as it can be swallowed, and not made into a mere diluent by a quart of white-wine whey.

"I hope I shall not be thought to have expatiated too much upon the virtues of a remedy which I have found so efficacious in my own practice; but, I have seen so many cases of scarlatina and

rubeola treated by others with the common antiphlogistic remedies, which have been so lingering, and have left such ill effects in the system, that I feel it my duty to urge the employment of the subcarbonate of ammonia as extensively as possible. I am well acquainted with the success in scarlatina attending the affusion of cold water; but, at the same time, that the employment of it is frequently objectionable to the friends of the patient; in my own experience, the general effects of it are not equal to those produced by the ammonia. Nor do I find, that the affusion of cold water is yet employed in rubeola or erysipelas, whereas the subcarbonate of ammonia may be given with almost equal success in all the exanthemata attended by erysipelalous inflammation."

Dr. Witt, of Spring Gardens, has recently published a pamphlet, in which he states that he has "from long and varied experience found ammonia to be a sure remedy for the cure of scarlet fever and measles." He was a pupil and private friend of the late Mr. Wilkinson, and writes with equal confidence of the efficacy of this valuable medicine; adding (p. 7), "My own medical friends, to whom this practice was before unknown, have shown the greatest readiness, after due explanation had been given, to afford it a fair trial; and I can add, that they all, without a single exception, have since expressed their conviction of its surprising efficacy." At the end of his pamphlet, Dr. Witt has inserted an appendix of cases, some of which are strikingly instructive and convincing. His third case, p. 21, is so instructive that I venture to call the reader's particular attention to it. "I was summoned during the past year to attend a young lady, supposed to be labouring under inflammation of the bowels. There certainly were several of the symptoms of that disorder; but, instead of bleeding, I saw reasons for pursuing a treatment which was chiefly of a cordial character; and in three days she was relieved for the time from pain, and left her bed, apparently well. In two days more, however, she was seized with dyspnoea to a fearful extent, which lasted for eighteen hours; from this she was also relieved without bleeding, and all seemed right again: but, soon after, a restlessness and disturbance to a still more alarming extent succeeded: for three days and nights she had no sleep; her distortions of countenance were so great that, from having been remarkable for her beauty before, she ceased to be at all so; while her naturally gentle and amiable disposition changed to one so exacting and imperious, as severely to try the patience of all about her. Although she did not lose her consciousness, it seemed as if the case would end in mania. On the ninth day from my first having seen her, I discovered on her chest the faintest possible pinkish blush, when the conviction flashed upon me that it was a case of scarlet fever. I at once commenced the administration of the ammonia, and gave it in unusual doses; for although medicines and treatment of a lowering kind had been avoided from the first, still I considered that her constitution required the greatest possible support in contending with this dis-

order. A solution containing seven grains to each two tablespoonfuls of water was therefore prepared, which quantity she took every hour for the space of twenty-four hours. The eruption then came fully out, exhibiting as perfect a specimen of the fever as could be witnessed. The same dose was next day repeated every other hour for the same space of time, when the eruption was declining fast. All cerebral disturbance ceased on the eruption becoming general; she slept profoundly; perspiration came on, and her pulse became less frequent. The health of the patient afterwards improved rather than deteriorated, as the health is so apt to do after an attack of scarlatina when subjected to the ordinary treatment. That the case was unquestionably one of scarlatina appeared from the fact that, during the time of the peeling of the skin, a child entered the patient's room and caught that disease.

"This case is instructive, as shewing how, when nature's efforts to throw out the poison on the skin had failed, the peritoneum was the membrane first affected, and next the membrane lining the lungs; the latter would seem to have been so from the extreme difficulty of breathing, which indeed was more distressing than I ever remember to have seen, except in patients near death. The third irregular effort fixed the poison on a still more dangerous site, the membranes of the brain. Now, if upon either of these three occasions, violent purgatives or the lancet had been resorted to, no one, I think, will doubt that the powers of nature would have been exhausted; the eruption would not have been thrown out; and death would to a certainty have ensued."

His last paragraph is this: "Every case of measles that I have known, when treated with ammonia, has followed as nearly as possible the course above described; and I may add, that, for the space of thirty years, I cannot call to mind a single case so treated in which I have found the results at all less favourable."

The eruption is well known to be a critical deposition on the surface, by which the animal economy endeavours to relieve itself from some internal morbid irritation. The appearance of the rash is essential to the perfect and safe resolution of the disease, and a remedy like ammonia, which at the same time moderates the precursory and attendant fever, softens the dry and burning skin, and sustains the vital and nervous power, is of eminent service in insuring the regular appearance and character of the eruption. Indeed, it is found to be far more efficacious in this than the warm bath, hot friction, warm drink, or anything else, and for this reason, that it is at once carried into the circulation, and in a striking manner improves the quality of the blood, and expels the offending matter from the system. Hence these diseases when treated with ammonia are not found complicated with visceral inflammation, oppressive internal congestions, or other irregular and dangerous symptoms, as they are when subjected to other kinds of treatment.

In scarlet fever and measles the natural secretion from the skin is checked, and the kidneys are very liable to assume a congested

state, which causes the accumulation of excrementitious and poisonous matter in the blood, and tends to the aggravation of the disorder. It must, therefore, always be a principal indication to eliminate this matter, and ammonia, from its known influence as a diaphoretic and mild diuretic, by its evident salutary action on the skin and kidneys, sets free these grand emunctories through which the morbid matter is expelled.

That very enlightened and skilful physician Dr. Graves, from not being fully aware of the efficacy of the volatile alkali in scarlet fever, was for a long period sorely puzzled and disappointed in its treatment, and after trying for years measures of all sorts, he concludes by saying, that those which he at length found more successful than any other in the malignant forms of scarlet fever were—"Wine and carbonate of ammonia freely given with camphor mixture."—*Graves's Clinical Medicine*, p. 541. The camphor mixture I believe to have been useless, except as a vehicle.

Albert Bodenius, a medical practitioner at Bretten, in Germany, has thoroughly investigated our present subject, and says, that having been led to the use of the volatile alkali, "he found to his unspeakable satisfaction and joy every gratifying result that he had been led to anticipate from the carbonate of ammonia." "It does not only cure the scarlet fever, but leaves no illness afterwards, when this remedy is employed in the right way." "He thinks it his duty to express his full conviction that the carbonate of ammonia is as certain a remedy in scarlet fever, as vaccination is a protection against the small-pox.*

"In other countries it has found advocates. Dr. Strahl of Philadelphia has made public his faith in it, grounded on his experience, as a real specific for the cure of scarlatina; and Dr. Reichen, of Brussels, has written at some length on the surprising effects which he has found it to have over certain epidemics, more especially over scarlatina."†

My practice in these maladies has not been so extensive as that of the professional men previously named, but all that I know confirms the truth of their statements. I believe, with Mr. Wilkinson, that this admirable remedy increases the strength of the arterial action, at the same time that it diminishes its frequency; that it sustains the vital powers without increasing the heat or irritability of the system; and by such operation counteracts the tendency in malignant scarlet fever to ulceration and sloughing, and all the other evils which sometimes attend this dreadful disease. Mr. Wilkinson's pamphlet on the efficacy of the volatile alkali in scarlet fever, was published in 1822, and yet in 1839 we find Dr. R. Williams, physician to St. Thomas's Hospital, publishing (*Elem.*

* Discussions and experiences respecting the specific power of carbonate of ammonia in scarlet fever. By A. W. Bodenius, Heidelberg, published in German, 1842.

† Dr. Witt on Scarlatina, p. 13.

of *Practical Medicine*, vol. i. p. 157) the following appalling facts, which we may adduce in proof of that round of ignorance, error and prejudice in which we seem always, more or less, to live. "A man was received into St. Thomas's Hospital with the eruption out upon him, and attention was alone paid to the state of his bowels. In a few hours the right lower extremity mortified from the heel to the hip, and it is unnecessary to state that he died.—A child, about four years of age, was seized with scarlet fever. The disease was not interfered with, but permitted to run its course without the aid of medicine. On the decline of the eruption, a discharge took place from the nostrils, the inflamed lip became gangrenous, and the child died in consequence."

How often, alas! has this terrible fever carried mourning and woe, not only among the poor, but into the fairest and best of families, sweeping off three or four out of five or six children, sometimes even more; it is therefore desirable to spread to the utmost the knowledge of the efficacy of this medicine, and to call upon the profession to extend to it a greater measure of confidence, and a fairer trial, than it has yet received from them. The preventible mortality in this country amounts to 90,000 lives a year; the deaths by scarlatina and measles alone during 1856, in England and Wales, were 21,280; these are not, as some imagine, evil things in the course of nature which we cannot reasonably hope to remove, or greatly to lessen. A beneficent Providence has provided means for their reduction, but our ignorance, indolence and inattention, or our prejudices and prepossessions, sadly interfere with their right use and application; and the mortality just noticed is one of the fearful consequences which necessarily flow from the neglect of the beneficent laws of God in nature, and from inattention to well-authenticated facts.

No acids or acid drinks should on any account be allowed while taking the ammonia, but the patient may drink at pleasure of thin barley water, toast and water, or water. The usual dose for children of ten years old is about five grains in a table-spoonful of water, sweetened with a little syrup, and repeated every three or four hours; but in the severer cases it may be given every hour or two, until a remission of the worst symptoms is visible; and in the case of adults, it may be increased to ten or even twelve grains at a dose in extreme cases.

The mildness of the fever being no security against very troublesome, and even fatal, *sequelæ*, the administration of ammonia should never be neglected in these diseases, how mild soever they may be in the commencement. There seems to be always a septic tendency induced in the whole system, by a depraved and poisoned state of the circulating fluids, against the possible consequences of which we ought to guard by the use of the volatile alkali. And I beg leave in the strongest manner to press this on the attention of the junior members of the profession, for however efficacious ammonia may be in holding the fibrine of the blood in solution,

and in promoting free elimination of the poison from the skin, when given early, it cannot be reasonably expected always to produce these salutary effects, and save from a harassing or even fatal termination, when commenced only at a late period of the malady. I am the more induced to urge this recommendation from its not being unusual for eminent authorities to advise ammonia to be given, "whenever the pulse presents the characters of frequency and softness combined," intimating thereby, if I understand them aright, that it is applicable only in that particular state of the pulse. (Dr. West's *Lectures on the Diseases of Infancy and Childhood*, p. 732). Dr. Barlow says, (*Practice of Medicine*, pp. 201, 684), "Of medicines, strictly so called, ammonia is the best of stimulants," and, "if the pulse be very compressible, ammonia may be added" to other medicines. Now I am reluctant to differ from physicians so judicious and accomplished; but here is the old erroneous notion of a stimulant attached to ammonia, and so calculated to mislead that I am constrained to dissent. The volatile alkali does not act as a stimulant, but as a sustaining saline alterative, antiseptic and diaphoretic, equally applicable and requisite when the pulse is not soft and compressible, as when it is. Its effects are so uniform on the blood and skin, that it always determines to the surface, and therefore is calculated to render a hard and frequent pulse soft and slow. By thus setting free the emunctories of the skin and kidneys, it wards off attacks of pneumonia in measles, and typhoid symptoms in scarlet fever, and frequently even cures them when they have supervened under other treatment.

Some professional men seem to think that sometimes, from the state of the throat, ammonia cannot be taken. I cannot share in this opinion; but if such a thing should temporarily occur, probably the next best medicine is the liquor ammoniæ acetatis. This is a valuable remedy in the diseases now treated of, since it operates in the same way as the volatile alkali, producing a free piaphoresis, and promoting the solvent power of the blood. It may be given in the usual dose, in a little water, every three hours. But it is not worthy of the same confidence as the sesqui-carbonate of ammonia, and I only mention it in consideration of the hesitation which some may feel at once to commit themselves to the employment of ammonia.

The state of the throat always demands attention, but it is a secondary consideration,* and I believe never to be so effectually and agreeably relieved by gargles or washes, as by the nitrous acid fumigation. The refreshing antiseptic vapour detached from nitrate of potash by means of sulphuric acid, and circulated through the room, presently clears the patient's throat without any annoy-

* I am glad to see that Dr. Richardson (*Clinical Essays*, vol. i, p. 110) is much of the same opinion with respect to attention to the throat.

ance to the sufferer, and at the same time removes the factor both of the breath and perspiration.

The patient should be put into the best ventilated apartment at command, where an abundant supply of pure air can be secured, *free from all draughts, and the possibility of chills.*

Diphtheria is so frequently associated with scarlet fever as to justify the inference that its *materies morbi* is some modification of the poison of scarlatina. If so, will not ammonia be found one of the best remedies in diphtheria? Besides, the sudden and unexpected death which so often takes place in diphtheria and scarlet fever seems generally to be the consequence of fibrinous clots in the heart—a deposition of fibrine in the right side of the heart, arresting the circulation; and ammonia being one of the most powerful blood solvents known, its early administration in diphtheria may be expected to be followed by the same gratifying results that we witness in scarlet fever. An instructive letter on the subject of fibrinous deposits in the heart in diphtheria, from Mr. C. R. Thompson, of Westerham, may be read in the *Medical Times*, 7 Jan. 1860, and a valuable paper thereon from Dr. Milner Barry was inserted in the *British Medical Journal* for July, 1858. But it is in the first volume of Dr. Richardson's excellent *Clinical Essays* that the most highly instructive information will be found on the pathology, as well as on the history and treatment of scarlet fever in general. It appears to me to contain also such enlightened views on other matters of great interest and importance to the pathologist and practical physician, as render it a volume of great value.

Epsom, Surrey,

December, 1861.